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ABSTRACT

Two approaches to teaching an accounting laboratory were compared: a lecture method and a self-instruction method. The achievement of 19 students in the lecture-method lab and 15 students in the self-instruction lab was assessed, based on scores on the first examination, the comprehensive final, and a laboratory score. A secondary analysis examined the achievement of Hispanic and non-Hispanic students taught by each method. The lecture method involved laboratory and homework assignments in addition to a short prepared lecture by the instructor. Students remained in the lab for 2 hours, and students not attending or leaving early were penalized. The self-instruction method eliminated the prepared lecture, although the lab instructor was available to answer questions and discuss material requested by students. While attendance was mandatory, students who completed their assignments could leave early. Students in the two groups did not significantly differ in achievement, and teaching method did not appreciably affect the achievement level of Hispanic students. It is suggested that colleges might consider offering self-instruction labs to complement the lecture component of the course. (SW)

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IMPACT OF ACCOUNTING PRINCIPLES' LABORATORIES ON ACHIEVEMENT AND METHOD OF INSTRUCTION

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Institutions of higher education are confronted with the responsibility of providing quality instruction within the framework of limited resources. In particular, AACSB accredited schools must find a balance between maintaining minimum class coverage percentages by terminally qualified faculty while, at the same time, providing the faculty the necessary release time to maintain a quality research program. One obvious approach that many schools have used is to increase class size. The increase in class size provides the advantages of increased doctoral coverage with generated release time for research endeavors. The student, however, may be the one to suffer from such an arrangement.

Another confounding issue is that many open-admission institutions are forced to provide remedial assistance to students, or else, face the consequences of high atrition due to large failure rates. One alternative to remedial classes is to provide laboratories or help sections for students whereby supplemental work is performed concurrently with the required class assignments. This alternative is especially appealing during current periods of budgetary constraints since graduate students can effectively and efficiently be utilized as instructors.

Anderson (1964), Griffin (1979), Mitchell (1963), Perritt (1972), and Caplan (1972) suggest that laboratories or help sections are an excellent teaching method to offset the disadvantages of conducting large classes in elementary accounting. Nayman (1977),

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Tatham (1975), Douthitt (1978), Wagoner (1973), and Pawliczek (1978) offer evidence that the use of laboratories are beneficial in other disciplines. None of the aforementioned studies, however, address the influence of the teaching methodology used in the accounting laboratory on the achievement level of the students. Anderson (1), Griffin (5), Mitchell (6), Perritt (9), and Caplan (2) suggest that laboratories are an excellent teaching technique for elementary accounting classes. However, none of these studies address the influence of a particular laboratory teaching methodology on the achievement level of the students nor have the studies matched student ethnic classification with different teaching styles.

Consequently, the objective of this study is to compare two different approaches in teaching an accounting laboratory to determine if a statistically significant difference between the achievement level of the two groups of students is detectable. In addition, the study compares the same two different approaches in teaching an accounting principles' laboratory by ethnic classification, Hispanic students versus non-Hispanic students, to determine if a statistically significant difference exists between achievement levels. The results of the study will offer insights for other institutions that may be faced with similar situations.

PROCEDURES

There are as many methods of conducting accounting laboratories as there are definitions of what constitutes a laboratory. Ideally, the inclusion of a "no lab" treatment group would be desirable in any comparison analysis to evaluate the effectiveness of the labs;

however, administrative and student concerns regarding the fairness of course credit prohibited such an experiment. For this controlled experiment, therefore, only two methods were investigated over a five-week intensive summer semester:

1) Lecture Method

With this approach the laboratory instructor presented a short prepared lecture along with a laboratory and homework assignment that was collected and graded which is the typical procedure for conducting a lab (Caplan, 1972). The students remained in the lab for the full two hour duration with a penalty for students who did not attend or left early.

2) Self-instruction Method

No prepared lecture was presented although the lab instructor would answer questions and discuss material requested by students. While attendance was mandatory, students were allowed to leave prior to the end of the meeting time provided that the laboratory assignment and the homework were completed and submitted to the lab instructor for grading. Gibbs (4) suggests that understanding best takes place through an independent, self-paced, open learning environment as incorporated in the self-instruction laboratory.

Twenty-one students were initially randomly assigned to each

laboratory situation. Additional control of extraneous variables was obtained by insuring each accounting lab had the same lab instructor, same lecture instructor, and the same student evaluation criteria; namely, major exams, homework assignments, and final examination.

Hispanic and non-Hispanic classification of students was identified for each assigned laboratory section:

1) Hispanic Group

Students with Spanish surnames for each laboratory situation were placed in this category. The large Hispanic composition of the university where this investigation took place made this study possible.

2) Non-Hispanic Group

Students without Spanish surnames for each laboratory situation were identified and placed in this category.

ANALYSIS

Thirty-four students completed the elementary accounting course (4-semester hours credit with lab); nineteen students were in the lecture method lab while fifteen were in the self-instruction lab. Three achievement level measures were investigated: the first examination, the comprehensive final, and a laboratory score.

Table 1 shows a comparison between the two methods for the point distributions of the first examination.

Table 1
Examination One--Point Distributions

	Lecture Method	Self-Instruction Method
Mean	74.86	75.06
Standard Deviation	12.70	13.80
Number of Students	21	19

t-value = .046

A total of forty students took the first examination. The t-test comparing the mean point scores indicates that there is no statistical significant difference at the .05 level. These results are not surprising since the exam was administered early in the term, and lab instruction methods had not yet had an opportunity to influence student achievement. The results do attest to the fact that the ability level of the students in the two groups is likely the same.

Table 2 exhibits the total point distributions of the 100-point possible lab scores.

Table 2
Laboratory--Point Distributions

	Lecture Method	Self-Instruction Method
Mean	82.00	80.88
Standard Deviation	9.51	16.00
Number of Students	19	16

t-value = -.247

Again, the t-test indicates that there is no statistical significant difference between the methods at the .05 level. These

results were very interesting because if differences in achievement are to exist it obviously would be on the lab grades.

Table 3 shows the point distribution of the comprehensive 200-point final examination administered during the final session.

Table 3
Final Examination--Point Distributions

	Lecture Method	Self-Instruction Method
Mean	117.47	122.40
Standard Deviation	25.30	16.10
Number of Students	19	15

t-value = .690

The results are the same as the first two measures exhibited in the aforementioned tables; i.e., no statistical significant difference between the two laboratory methods. In all three t-tests analyzed, the t-test for equal population variances was used since the F-values for the hypothesis of equal population variances could not be rejected at the .05 level.

Thirty-two students who could be clearly classified into the two ethnic classifications previously defined, completed the elementary accounting course (4-semester hours credit with lab); four treatment groups were identified from the course for analysis: Hispanic students in the lecture laboratory (G1), Hispanic students in the self-instruction laboratory (G2), non-Hispanic students in the lecture laboratory (G3) and non-Hispanic students in the self-instruction laboratory (G4). The criterion used to evaluate achievement in the course was a student's comprehensive final examination.

The null hypothesis tested was that the four population mean achievement scores were equal, implying a one-way ANOVA design. However, because of a small sample size and the associated concerns over satisfying the assumptions of normality and homoscedasticity, the Kruskal-Wallis one-way analysis by ranks tests was used. The results of the final examination (200 total points) with the associated rankings are summarized in Table 1.

Table 1
Kruskal-Wallis Analysis

G1	G2	G3	G4
104(7.5)	116(14)	80(2)	84(3)
124(20.5)	100(5.5)	120(17.5)	112(10.5)
164(31)	128(24)	140(27.5)	172(32)
124(20.5)	116(14)	72(1)	144(29.5)
128(24)		140(27.5)	
144(29.5)		128(24)	
104(7.5)		112(10.5)	
124(20.5)		132(26)	
116(14)		108(9)	
116(14)		120(17.5)	
		124(20.5)	
		100(5.5)	
		116(14)	
		88(4)	

The H-valve corrected for ties was 1.42 which was not statistically significant at the .05 level. Consequently, the null hypothesis cannot be rejected, implying that Hispanic student achievement is no different from other students even with different laboratory instruction methods.

CONCLUSIONS

Although the sample was small and the subjects represented only a single academic institution, the results of this investigation were

very interesting and offer new insights into the area of offering accounting principles' laboratories. The method of teaching an elementary accounting laboratory produces little difference in the final achievement scores of the students as defined by the three different measures used during this investigation. Therefore, the method of teaching an accounting laboratory does not appreciably affect the final measure of achievement of the students in the course. The implications of this study suggests a movement towards self-instruction accounting laboratories to complement the accounting principles' lecture thereby allowing for larger lecture classes. Thus, quality instruction within the framework of limited resources might be achieved more easily. It was also demonstrated that a particular laboratory teaching style does not appreciably alter the achievement level of Hispanic students. Therefore, it appears that institutions that offer or plan to offer accounting laboratories need not concern themselves with classroom instructional format.

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